



STARS ACADEMY LAHORE

MULTAN CAMPUS

Opp: City Hospital 1674/Peer Khursheed Colony Road, Near Chungi No.9, Multan
Head office: 590-Q Main Boulevard, Johar Town Lahore, 0321-9432186, 0321-4693044, www.stars.edu.pk

STARS ENTRY TEST SYSTEM-2019

MDCAT (CRASH PROGRAM)

Test Code: CRASH 10

Time Allowed: 150 mins

BIOLOGY

1. Receptors for hearing come under heading of:
A) Chemoreceptors ☐ B) Photoreceptors ☐ C) Mechanoreceptors ☒ D) Thermoreceptors ☐
2. Myelin sheath surrounding neuron fibers is made of:
A) Carbohydrates ☐ B) Lipids ☐ C) Proteins ☐ D) Lipoprotein ☒
3. Coordination results in;
A) Regulation of body functions ☐ B) Integration of body functions ☐ C) Organization of body functions ☐ D) All of these ☒
4. Coordination in man is brought about by:
A) Nervous system ☐ B) Endocrine glands ☐ C) Both a & b ☒ D) None of these ☐
5. Which of the following is present inside the vertebral column?
A) Brain ☐ B) Spinal cord ☒ C) Both a & b ☐ D) None of these ☐
6. A reflex arc involves:
A) Sensory neuron ☐ B) Associative neuron ☐ C) Motor neuron ☐ D) All of above ☒
7. The axon conducts nerve impulse _____ the cell body.
A) Away from ☒ B) Around ☐ C) Toward ☐ D) Only inside ☐
8. The part of brain plays important role in the formation of long term memory
A) Amygdala ☐ B) Hippocampus ☒ C) Thalamus ☐ D) Pons ☐
9. Which of the following is NOT true of myelin?
A) IT is formed by Schwann cells ☐ B) It prevents from pathogens ☒ C) It allows impulses travel faster ☐ D) It makes the impulse jump ☐
10. What does glucagon do?
A) Assists in digestion within the stomach ☐ B) Helps central water secretion and absorption from the intestines ☐ C) Assist insulin in regulating blood (Sugar) in hormonal range ☐ D) increase sugar level in blood ☒
11. The hormones composed of amino acids is
A) Oestrogen ☐ B) Cortisone ☐ C) Thyroxin ☒ D) Insulin ☐
12. Hormones
A) Act as coenzyme ☐ B) Influence synthesis ☐ C) Act as enzyme ☐ D) Regulate metabolic reaction ☒
13. The cell body or soma is main _____ part of the nerve cell
A) Functional ☐ B) Nutritional ☒ C) Structural ☐ D) Active ☐
14. Which is the center of reflex movements related to eyes
A) Midbrain ☐ B) Cerebellum ☐ C) Pons ☐ D) Thalamus ☐
15. A nerve is a:
A) collection of neurons ☐ B) Concentration of dendrites of neurons ☐ C) Bundles of axons or dendrites of neurons ☐ D) Bundles of axons or dendrites of neurons bounded by connective tissue ☒
16. Which is not related to others?
A) Cretinism ☐ B) Exophthalmic ☐ C) Myxedema ☐ D) Diabetes mellitus ☒
17. Resting membrane potential is
A) -0.07 volts ☒ B) -0.70 volts ☐ C) -0.007 volts ☐ D) +0.007 volts ☐
18. Which of the following system relays impulse from CNS to skeletal muscles?
A) Somatic neural system ☒ B) Sympathetic neural system ☐ C) Parasympathetic neural system ☐ D) Autonomic neural system ☐
19. Neuron is a _____ structure composed of three major parts cell body _____ and axon.

- A) Macroscopic, dendrites
B) Microscopic, dendrites
C) Microscopic, cyton
D) Microscopic, soma
20. When a neuron is in a resting state, i.e., not conducting any impulse, the axonal membrane is
A) Equally permeable to both Na^+ and K^+ ions.
B) Impermeable to both Na^+ and K^+ ions.
C) Comparatively more permeable to K^+ ions and nearly impermeable to Na^+ ions.
D) Comparatively more permeable to Na^+ ions and nearly impermeable to K^+ ions.
21. The potential difference across resting membrane is negatively charged. This is due to differential distribution of the following ions.
A) Na^+ and K^+ ions
B) Ca^{++} and Mg^{++} ions
C) CO^{++} and Cl^- ions
D) Ca^{++} and Cl^- ions
22. Which of the following prevents the fall of fruits?
A) GA_3
B) NAA
C) Ethylene
D) Zeatin (Cytokinin)
23. Which of the following hormones can replace vernalisation?
A) Ethylene
B) Cytokinins
C) Gibberellins
D) Auxins
24. Some of the growth regulators affect stomatal opening. Closure of stomata is brought about by
A) Absciscic acid
B) Gibberellic acid
C) Auxin
D) Indole butyric acid
25. In spinal cord of humans, the grey matter is _____ shaped.
A) Circular
B) Irregular
C) Butterfly
D) Longitudinal
26. Resting axonal membrane is
A) Unpolarized
B) Polarized and more permeable to Na^+
C) Unpolarized and more permeable to K^+
D) Polarized and more permeable to K^+
27. Right and left cerebral hemispheres are connected via
A) Corpus striatum
B) Corpus callosum
C) Thalamus
D) Hippocampus
28. Forebrain consist of
A) Cerebrum
B) Thalamus
C) Hypothalamus
D) All of these
29. The major coordinating centre for sensory and motor signaling is
A) Thalamus
B) Hypothalamus
C) Medulla
D) Pons
30. Which one of the following is a naturally occurring growth inhibitor?
A) IAA
B) NAA
C) ABA
D) GA
31. Hormone responsible for senescence
A) ABA
B) GA
C) Auxin
D) Cytokinin
32. Which of the following plant hormone substitutes for long photoperiod in flowering plants?
A) Auxin
B) Cytokinin
C) Gibberellin
D) Ethylene
33. Which of the following is responsible for apical dominance?
A) GA_3
B) ABA
C) IAA
D) Florigen
34. Auxin inhibits the growth of
A) Apical buds
B) Parthenocarpic development of fruits
C) Lateral axillary buds
D) Roots of cuttings
35. Hypothalamus contain the brain centre which controls the
A) Body temperature
B) Urge for drinking
C) Urge for eating
D) All of these
36. Which of the following is true about hypothalamus?
A) Situated at the base of thalamus
B) Contains neurosecretory cell
C) It contains the centre for thermoregulation
D) All of these
37. The part of brain located between the thalamus, hypothalamus of forebrain and pons is known as
A) Mid – brain
B) Hind – brain
C) Limbic system
D) All of these
38. Chemicals called _____ are involved in the transmission of impulses at chemical synapse.
A) Neurohormones
B) Neurotransmitters
C) Receptors
D) Interferon
39. Na^+ / K^+ pumps transports
A) 3Na^+ out for 2K^+ in
B) 2Na^+ out for 3K^+ in
C) 3Na^+ in for 2K^+ out
D) 2Na^+ in for 3K^+ out
40. Which of the following is true about neural membrane?
A) Different of ion channels present.
B) Ion channels are selectively permeable.
C) Impermeable to negatively charged protein present in axoplasm.
D) All the above
41. Depolarization occurs due to
A) Influx of Na^+
B) Efflux of Na^+
C) Influx of K^+
D) Efflux of K^+
42. Unidirectional transmission of the nerve impulse is maintained by
A) Interneurons
B) Synapse
C) Myelin sheath
D) Membrane polarity
43. In reflex action, the reflex arc is formed by
A) Muscle, receptor, brain
C) Brain, spinal cord, muscle

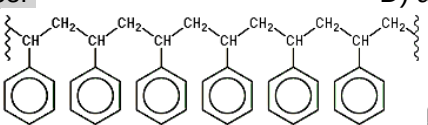
- B) Receptor, spinal cord, muscle
D) Receptor, muscle, spinal cord
44. Which of the following PGR is widely used as herbicide?
A) Auxin
B) Gibberellic acid
C) Cytokinins
D) All of these
45. Auxin 2, 4 – D is used for what?
A) To remove weeds from farms by farmers
B) To remove weeds from lawn by gardeners
C) To induce flowering in horticulture
D) All of these
46. Following are the functions of insulin except
A) Glycogenesis
B) ↑ Glucose utilization by hepatocyte
C) ↑ Glucose utilization by adipocyte
D) Gluconeogenesis
47. Different types of gibberellins is reported from what kind of organisms?
A) Fungi
B) Higher plants
C) Both A) and B)
D) Protists
48. The name 'Auxin' was given to which chemical?
A) Indole – 3 – acetic acid
B) Indole – 3 – butyric acid
C) Indole – 6 – acetic acid
D) Indole – 6 – butyric acid
49. What prevents the fruit and leaf to drop in early?
A) ABA
B) IAA
C) NAA
D) Both B) and C)
50. What promotes the abscission of older mature leaf?
A) Absciscic acid
B) Auxin
C) Ethylene
D) Cytokinins
51. One of the synthetic auxin is:
A) IBA
B) NAA
C) IAA
D) GA
52. Parthenocarpic fruit cannot be produced by application of
A) IAA
B) ABA
C) 2, 4 – D
D) IBA
53. Which statements are correct?
a) Cytokinins suppress the synthesis of chlorophyll
b) Auxins control apical dominance
c) Gibberellins promote shoot elongation
d) Absciscic acid enables seeds to withstand desiccation
A) a and b) only
B) a and c) only
C) b) and c) only
D) b) , c) and d) only
54. Which is not an influence of auxins?
A) Parthenocarp
B) Tropical movements
C) Bolting
D) Apical dominance
55. Alpha – amylase synthesis is promoted by
A) IAA
B) NAA
C) Cytokinin
D) GA
56. Presence of which of the following in a seed is associated with dormancy?
A) Absciscic acid
B) Gibberellic acid
C) Ethylene
D) Auxin
57. The longest cell in the body of an animal is
A) Osteocytes
B) Chromatophores
C) Neuron
D) Lymph corpuscles
58. Axon is characterized by
A) Transformation of energy
B) Receiving the impulse
C) Providing energy for impulse
D) Conduction of impulse
59. Afferent nerve fibres carry impulses from
A) Effector organs to central nervous system
B) Receptors to central nervous system
C) Central nervous system to muscles
D) Central nervous system to receptors
60. Which part of mammalian brain controls the muscular co-ordination?
A) Cerebrum
B) Corpus callosum
C) Cerebellum
D) Medulla oblongata
61. Nerve impulse is
A) Carried by afferent and efferent fibres
B) Is not carried by any afferent or efferent fibres
C) Is carried away by afferent fibres and brought about by efferent fibres
D) Is brought by afferent fibres and carried by efferent fibres
62. Which of the following depicts the concentration of sodium and potassium when a neuron is at resting potential?
A) High potassium and high sodium outside the neurons
B) High potassium and low sodium outside the neurons
C) Low potassium and low sodium outside the neurons
D) Low potassium and high sodium outside the neurons
63. When action potential begins, sodium gates open, allowing Na^+ ions to cross the membrane. Now the polarity changes to
A) Negative outside and positive inside
C) Charged protein outside; Na^+ and K^+ out-side

- B) Positive outside and negative inside D) Na⁺ and K⁺ outside and water only in-side
- 64. Which is NOT true of a synapse?**
 A) Neurotransmitters affect postsynaptic neurons
 B) Many neurons may be involved
 C) A synaptic cleft separates the neurons of the synapse
 D) Neurotransmitters are released from dendrites
- 65. The cranial nerves**
 A) Arise from spinal cord
 B) Have both motor and sensory functions
 C) Control sympathetic pathways
 D) All of the above
- 66. After firing an impulse, a neuron is incapable of responding to another stimulus for the duration of its**
 A) Membrane potential
 B) Threshold level
 C) Refractory period
 D) Action potential
- 67. In mammals, the autonomic system is composed of**
 A) Sympathetic and parasympathetic nerves
 B) Cranial and spinal nerves
 C) Brain and spinal cord
 D) Medullated and non medullated nerves
- 68. Which of the following is NOT an effect produced by parasympathetic stimulation?**
 A) Dilation of the pupils
 B) Increased saliva production
 C) Increased stomach activity
 D) Constriction of the bronchi
- 69. Synaptic vesicles are present:**
 A) Within the presynaptic knob
 B) In the synaptic cleft
 C) Within the postsynaptic knob
 D) In all of them
- 70. Cell bodies of sensory neurons constitute:**
 A) dorsal root ganglion
 B) dorsal root
 C) ventral root ganglion
 D) posterior root ganglion
- 71. Which of the following is common to all neurones?**
 A) a cell body which contains a nucleus
 B) a thick myelin sheath
 C) presence of nodes of ranvier
 D) presence of schwann cells
- 72. The chief morphological and physiological unit of the nervous system is the:**
 A) Ganglion B) Neuron C) Reflex D) Synapse
- 73. The groups of ribosomes present in the cell body of the neuron, which are associated with rough endoplasmic reticulum, are called:**
 A) Meissner's corpuscles
 B) Nissl's granules
 C) Pacinian corpuscles
 D) lysosome granules
- 74. A nerve impulse is a wave of electrochemical change traveling along the length of the neuron involving chemical reactions and movement of ions across the:**
 A) Synapse B) Cell wall C) Cell membrane D) Axon
- 75. The mammalian forebrain is differentiated into the thalamus, limbic system and the:**
 A) Cerebellum B) Cerebrum C) Hippocampus D) Hypothalamus
- 76. The number of human cerebral nerves is:**
 A) 12 B) 24 C) 31 D) 62
- 77. Neurotransmitters are released by:**
 A) Axon ending B) Dendron ending C) Cell body D) Synaptic cleft
- 78. The movement of the nerve impulse across synaptic cleft is primarily?**
 A) A chemical event
 B) A physical event
 C) A electrical event
 D) A biological event
- 79. Cerebellum of brain is concerned with:**
 A) Balancing during sitting
 B) Coordination of muscular movements
 C) Balancing during active movement
 D) Initiation of muscular contraction
- 80. The origin of sympathetic nervous system is from?**
 A) Brain
 B) Upper part of spinal cord
 C) Middle part of spinal cord
 D) Lower part of spinal cord

CHEMISTRY

81. **R-CH₂OH can be converted into R-CH₂COOH. The correct sequence of reagent is:**
 A) PBr₃, KCN, H⁺ C) HCN, PBr₃, H⁺
 B) KCN, H⁺ D) PBr₃, KCN, H₂
82. **The strongest acid is:**
 A) CH₃-COOH C) CH₃CH₂-COOH
 B) Cl-CH₂-COOH D) Br-CH₂-COOH
83. **The correct name of the following compound is?**

$$\begin{array}{c} \text{HOOC}-\text{CH}_2-\text{CH}-\text{COOH} \\ | \\ \text{NH}_2 \end{array}$$

 A) Aspartic acid B) 2-aminobutandioic acid C) Adipic acid D) Both A & B
84. **The end product 'C' in this reaction, $\text{CH}_3\text{COOH} \xrightarrow{\text{CaCO}_3} \text{A} \xrightarrow{\text{Heat}} \text{B} \xrightarrow{\text{NH}_2\text{OH}} \text{C}$, is:**
 A) Ethanaloxime C) propanoneoxime
 B) Acetamide D) Ethane nitrile
85. **In the reaction, $\text{CH}_3\text{COOH} \xrightarrow{\text{LiAlH}_4} \text{A} \xrightarrow{\text{PCl}_5} \text{B} \xrightarrow{\text{AIC.KOH}} \text{C}$ the product C is:**
 A) Ethylene B) Acetaldehyde C) Acetyl chloride D) Acetylene
86. **Bakelite, Nylon and Dacron (polyester) are all:**
 A) Monomers B) Homopolymers C) co-polymers D) Addition polymers
87. **The compound used in the manufacture of terylene (polyethylene terephthalate) is:**
 A) Ethylene C) vinyl chloride
 B) Ethylene glycol D) adipic acid
88. **Monomer of**  **is:**
 A) 2-methylpropene C) styrene
 B) Propylene D) ethene
89. **Which one of the following polymers is prepared by condensation polymerization:**
 A) Epoxy resins B) Neoprene Rubber C) Teflon D) PVC
90. **Which one of the following monomers gives the polymer neoprene on polymerization:**
 A) CH₂=CH-Cl C) CCl₂=CCl₂
 B) CH₂=C(Cl)-CH=CH₂ D) CF₂=CF₂
91. **Which of the following is a polyether:**
 A) Teflon B) Epoxy resins C) Nylon-6, 6 D) Bakelite
92. **Which of the following is a fully fluorinated polymer?**
 A) Neoprene B) Thiol C) Teflon D) PVC
93. **Which polymer is used in the manufacture of paints?**
 A) Bakelite B) Acrylic resins C) Polythene D) Poly vinyl chloride
94. **Primary structure of protein contains which type of bond?**
 A) Only hydrogen bond C) only covalent
 B) Only van der waals forces D) all of these
95. **A decapeptide contains _____ peptide linkages:**
 A) 10 B) 9 C) 8 D) 18
96. **Which one of the following compounds exists as a dipolar ion?**
 A) carbohydrate C) α-amino acid
 B) Long chain fatty acids D) α-halo carbonyl compound
97. **The number of dipeptides (containing different amino acids) formed by 3 different amino acids are:**
 A) 3 B) 5 C) 4 D) 6
98. **A certain compound gives +ive test with ninhydrin solution & with Benedict's solution the compound is -ive:**
 A) DNA B) a lipid C) a monosaccharide D) an amino acid
99. **At pH = 4, glycine exists as:**
 A) H₃N⁺ - CH₂ - COO⁻ C) H₃N⁺ - CH₂ - COOH



100. RNA contains:

A) Ribose sugar and thymine

B) Ribose sugar and uracil

C) deoxyribose sugar and uracil

D) deoxyribose sugar and thymine

101. The reason for double helical structure of DNA is:

A) Van der Waals forces

B) dipole-dipole forces

C) hydrogen bonding

D) electrostatic attractions

102. The pyrimidine bases present in DNA are:

A) Cytosine and adenine

B) Cytosine and thymine

C) cytosine and guanine

D) cytosine and uracil

103. Which one of the following is an example of thermosetting polymers?

A) Epoxy resins

B) Synthetic varnish

C) Bakelite

D) All of these

104. Which of the following polymers is synthesized using a free radical polymerization technique?

A) Polyvinyl acetate

B) Polyester

C) Nylon-6,6

D) Bakelite

105. Which of the following polymer has ester linkages?

A) Nylon

B) Bakelite

C) Terylene (polyethylene terephthalate)

D) PVC

106. The helical form of a polypeptide chain is due to the presence within the molecule of:

A) Covalent bonds

B) Disulphide bonds

C) glycosidic bonds

D) hydrogen bonds

107. Pyrimidine bases contain 4 carbon atoms and purine bases contain 5 carbon atoms. How many carbon atoms are there in a nucleotide containing cytosine?

A) 8

B) 9

C) 10

D) 11

108. A nucleotide is composed of:

A) An acid, a base, and a sugar

B) A base and sugar

C) a base, a sugar and a phosphate group

D) an acid, a sugar and a phosphate group

109. Key function of DNA is:

A) To control metabolism

B) To control synthesis of proteins

C) To catalyze biochemical reactions

D) To transfer genetic information from one generation to the next

110. In double helical structure of DNA, which pair is a complementary base pair?

A) C-G

B) A-U

C) A-G

D) G-T

111. The widely used PVC is a polymerized product of:

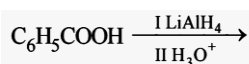
A) $CH_2 = CH_2$

B) Polypropylene

C) Polyurethane

D) $CH_2=CHCl$

112. The organic product formed in the reaction?



A) $C_6H_5CH_2OH$

B) $C_6H_5CH_3$ & CH_3OH

C) C_6H_5COOH & CH_4

D) $C_6H_5CH_3$ & CH_4

113. Among the following acids, which has the lowest pK_a value?

A) CH_3COOH

B) $HCOOH$

C) $(CH_3)_2CH-COOH$

D) CH_3CH_2COOH

114. Ester amylabutyrate has the flavor of:

A) Raspberry

B) Orange

C) Apricot

D) Banan

115. Which test is applied to detect amino-acid:

A) Fehling's test

B) Iodoform test

C) Ninhydrin test

D) 10% NaOH solution test

116. In the conversion of wine to vinegar:

A) Ethanol is oxidized to acetic acid

B) Methanol is oxidized to acetic acid

C) Ethanol is reduced to acetic acid

D) Methanol is reduced to acetic acid

117. In adipic acid, $HOOC(CH_2)_nCOOH$, 'n' is equal to:

A) 1

B) 3

C) 2

D) 4

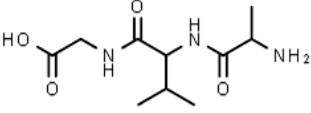
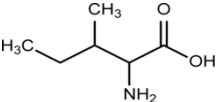
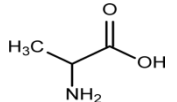
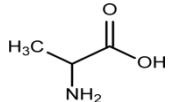
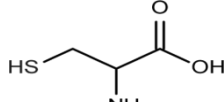
118. Acetic acid undergoes reduction with $LiAlH_4$ to give:

A) Ethanol

B) Ethanal

C) Ethane

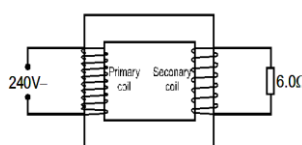
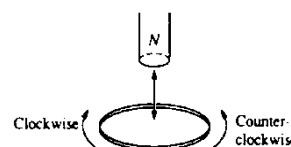
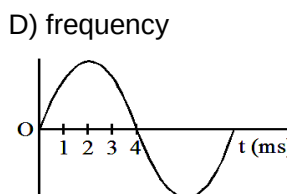
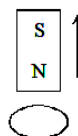
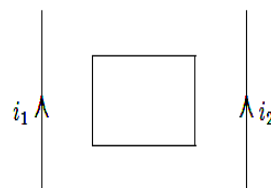
D) Ethyne

119. The end product 'C' in the following sequence of reaction $CH_3Cl \xrightarrow{KCN} (A) \xrightarrow{H^+/H_2O} (C)$ is:
 A) HCOOH B) CH_3COOH C) CH_3NH_2 D) CH_3COCH_3
120. In the following reaction, X and Y are respectively: $CH_3COOH + NH_3 \longrightarrow X \xrightarrow{\Delta} Y + H_2O$
 A) CH_3NH_2 , CH_3CONH_2 C) CH_3CONH_2 , CH_3COOH
 B) $CH_3CH_2COOC_2H_5$ D) CH_3COONH_4 , CH_3CONH_2
121. Which molecule contains peptide bonds?
 A) ATP B) Collagen C) DNA D) maltose
122. Choose the incorrect statement out of the followings:
 A) Only L-amino acids are found in the biological system
 B) Glycine is optically inactive
 C) Lysine contains polar hydrophilic R group
 D) Histidine is a neutral amino acid
123. Structure of a tripeptide is:  This is called?
 A) Ala-Gly-Val C) Val-Ala-Gly
 B) Ala-Val-Gly D) Gly-Val-Ala
124. Glycine is different than all other naturally occurring α amino acids due to:
 A) Having no α -hydrogen atom C) Neutral in nature
 B) It is optically inactive D) Both A & B
125. All are essential amino acid except:
 A) Valine B) Proline C) Lysine D) Histidine
126. Incorrect statement about amino acids is:
 A) The zwitter ionic structure is also called internal salt
 B) All α -amino acids exist largely in dipolar ionic forms
 C) $-NH_2$ group always present on α , β or γ carbon atom in naturally occurring amino acids
 D) Every amino acid contains at least one amino group and one carboxylic group
127. Which of the following amino acid(s) are polar?
 A) Histidine B) Valine C) Proline D) All are polar amino acids
128. Which of the following amino acids side chain is a single isopropyl group?
 A) Valine B) Lysine C) Alanine D) Histidine
129. Alanine is an amino acid which shows neutral effect on litmus paper, the formula of alanine is?
 A)  B) 
 C)  D) 
130. 20 α -amino acids found in protein are bifunctional compounds having at least a carboxylic acid group and an amino group. Which of the following α -amino acid has the secondary amino group in its structure?
 A) Valine B) Proline C) Alanine D) Glycine
131. A decapeptide (mol. wt. 800) on complete hydrolysis gives glycine (mol. wt. 75) alanine and phenylalanine. Glycine contributes 47 % to the total weight of the hydrolyzed product. The number of glycine units in the decapeptide is?
 A) 3 B) 5 C) 4 D) 6
132. The secondary structure of protein refers to?
 A) α -helical back bone C) Hydrophobic interactions
 B) Sequence of β -amino acids D) Both A and C
133. Nylon threads are made of:
 A) Polyester B) Polyvinyl chloride C) polyamide D) polyethylene
134. The nucleic acid base found in mRNA but not in DNA is
 A) Adenine B) Guanine C) Cytosine D) Uracil
135. The molecular weight of acetic acid in benzene as determined by depression in freezing point method corresponds to :

- A) Ionization of acetic acid
 B) Trimerization of acetic acid
 C) dimerization of acetic acid
 D) polymerization of acetic acid
- 136. Identify the correct order of boiling points of the following compounds:**
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{COOH}$ (1) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ (2) $\text{CH}_3\text{CH}_2\text{COOH}$ (3)
 A) $1 > 2 > 3$
 B) $1 > 3 > 2$
 C) $3 > 1 > 2$
 D) $3 > 2 > 1$
- 137. Glacial acetic acid is**
 A) Pure acetic acid at 100°C
 B) Acetic acid mixed with methanol
 C) pure acetic acid at 116°C
 D) pure acetic acid at 17°C
- 138. Benzoic acid gives benzene on being heated with X and phenol gives benzene on being heated with Y. Therefore X and Y are respectively**
 A) soda-lime and copper
 B) Zn dust and soda-lime
 C) Zn dust and NaOH
 D) soda-lime and zinc dust
- 139. Saponification of ethyl acetate with caustic soda as alkali gives**
 A) Ethyl alcohol and ethanoic acid
 B) Ethanoic acid and sodium ethoxide
 C) sodium acetate and ethanol
 D) formic acid and ethanoic acid
- 140. Terylene (a polyester) is a condensation polymer of ethylene glycol and:**
 A) benzoic acid
 B) salicylic acid
 C) Picric acid
 D) terephthalic acid

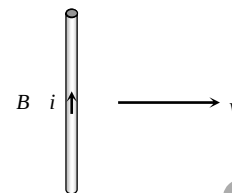
PHYSICS

141. A rectangular loop of wire is placed midway between two long straight parallel conductors as shown. The conductors carry currents i_1 and i_2 , as indicated. If i_1 is increasing and i_2 is constant, then the induced current in the loop is:
- A) zero
B) clockwise
C) counterclockwise
D) depends on $i_1 - i_2$
142. A magnetic field of $2 \times 10^{-2} \text{ T}$ acts at right angles to a coil of area 100 cm^2 with 50 turns. The average emf induced in the coil is 0.1 V, when it is removed from the field in time t . The value of t is
- A) 0.1 sec
B) 0.01 sec
C) 1 sec
D) 20 sec
143. If the North Pole of a magnet moves away from a metallic ring, then the current flows viewed above:
- A) Clockwise
B) First clockwise and then anticlockwise
C) Anticlockwise
D) None of these
144. In a step-up transformer, the turns ratio is 1 : 2, A DC cell (e.m.f. = 1.5 V) is connected across the primary. The voltage across the secondary is:
- A) 3.0 V
B) 0 V
C) 0.75 V
D) 1.5 V
145. In a circuit, the induced emf increases if:
- A) the flux linked increases
B) the rate of change of flux is greater
C) there is no change in the flux
D) The flux linked decreases
146. A step-down transformer operates on a 200 V line and supplies a current of 2 A. The ratio of primary to secondary winding is 5 : 1. The output voltage in the secondary is:
- A) 200 V
B) zero V
C) 40 V
D) 1000 V
147. A coil of 100 turns and area 5 square centimetre is placed in a magnetic field $B = 0.2 \text{ T}$. The normal to the plane of the coil makes an angle of 90° with the direction of the magnetic field. The magnetic flux linked with the coil is
- A) $5 \times 10^{-3} \text{ Wb}$
B) 10^{-2} Wb
C) $5 \times 10^{-5} \text{ Wb}$
D) 0 Wb
148. A transformer transforms
- A) voltage
B) power
C) current
D) frequency
149. The emf is induced in a wire subjected to a changing magnetic field. The flux density B of this field varies with time t as shown. At which value of t is the magnitude of the emf induced in the wire is maximum:
- A) 1 ms
B) 3 ms
C) 2 ms
D) 4 ms
150. Lenz's law is in accordance with law of conservation of:
- A) Mass
B) Charge
C) Momentum
D) Energy
151. In the figure, the north pole of the magnet is first moved down toward the loop of wire, then withdrawn upward. As viewed from above, the induced current in the loop is
- A) always clockwise with increasing magnitude
B) always clockwise with decreasing magnitude
C) first clockwise, then counterclockwise
D) first counterclockwise, then clockwise
152. A magnet is moved towards a coil along its axis and emf induced in the coil ' ϵ '. Now if the coil also starts moving towards the magnet with same speed, the induced emf will be:
- A) ϵ
B) 4ϵ
C) 2ϵ
D) 8ϵ
153. The diagram shows an iron-cored transformer assumed to be 100% efficient. The ratio of the secondary turns to the primary turns is 1:20. A 240V a.c. supply is connected to the primary coil and a 6.0Ω resistor is connected to the secondary coil. What is the current in the primary coil?
- A) 0.10A
B) 2.0A
C) 0.14A
D) 40A
154. Average value of A.C over one complete cycle is
- A) Maximum
B) Zero
C) Minimum
D) None of the above



155. **A.C voltmeter measure**
 A) Peak value of voltage
 B) rms value of voltage
 C) Average value of voltage
 D) All of the above
156. **A bar magnet is dropped freely toward a conducting ring, which one statement is true?**
 A) Its acc is equal to "g"
 B) Its acc is greater than "g"
 C) Its acc is less than "g"
 D) All may be possible

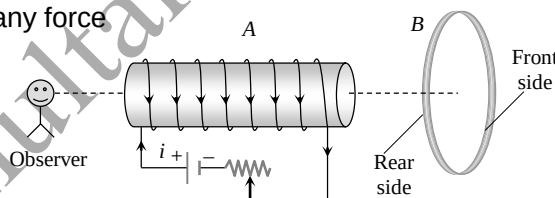
157. **A conducting wire is moving towards right in a magnetic field B . The direction of induced current in the wire is shown in the figure. The direction of magnetic field will be**



- A) In the plane of paper pointing towards right
 B) In the plane of paper pointing towards left
 C) Perpendicular to the plane of paper and down-wards
 D) Perpendicular to the plane of paper and upwards
158. **A circular coil of 500 turns of wire has an enclosed area of 0.1 m^2 per turn. It is kept perpendicular to a magnetic field of induction 0.2 T and rotated by 180° about a diameter perpendicular to the field in 0.1 sec . How much charge will pass when the coil is connected to a galvanometer with a combined resistance of 50 ohms**
 A) 0.2 C
 B) 2 C
 C) 0.4 C
 D) 4 C

159. **An aluminium ring B faces an electromagnet A . The current I through A can be altered**

- A) Whether I increases or decreases, B will not experience any force
 B) If I decrease, A will repel B
 C) If I increases, A will attract B
 D) If I increases, A will repel B



160. **The north pole of a bar magnet is moved swiftly downward towards a closed coil and then second time it is raised upwards slowly. The magnitude and direction of the induced currents in the two cases will be of**

First case

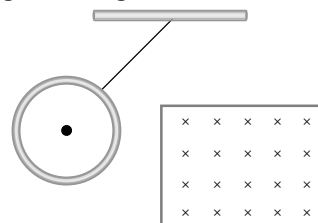
- A) Low value clockwise
 B) Low value clockwise
 C) Higher value clockwise
 D) Higher value anticlockwise

Second case

- A) Higher value anticlockwise
 B) Equal value anticlockwise
 C) Low value clockwise
 D) Low value clockwise

161. **A metallic ring connected to a rod oscillates freely like a pendulum. If now a magnetic field is applied in horizontal direction so that the pendulum now swings through the field, the pendulum will**

- A) Keep oscillating with the old time period
 B) Keep oscillating with a smaller time period
 C) Keep oscillating with a larger time period
 D) Come to rest very soon



162. **Plane of eddy currents makes an angle with the plane of magnetic lines of force equal to**

- A) 40°
 B) 0°
 C) 90°
 D) 180°

163. **A coil of area 100 cm^2 has 500 turns. Magnetic field of $0.1 \text{ weber / metre}^2$ is perpendicular to the coil. The field is reduced to zero in 0.1 second . The induced e.m.f. in the coil is**

- A) 1 V
 B) 50 V
 C) 5 V
 D) Zero

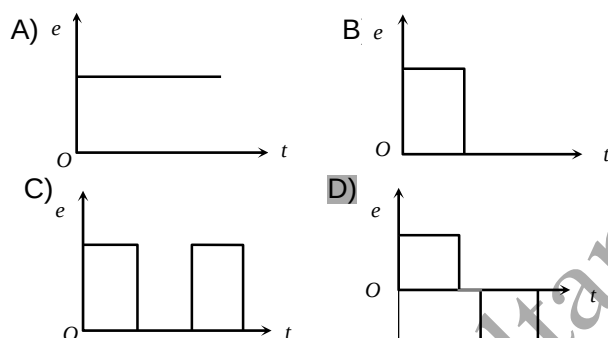
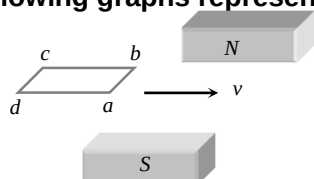
164. **A coil having n turns and resistance $R \Omega$ is connected with a galvanometer of resistance $4R \Omega$. This combination is moved in time $t \text{ seconds}$ from a magnetic field $W_1 \text{ weber}$ to $W_2 \text{ weber}$. The induced current in the circuit is**

- A) $-\frac{W_2 - W_1}{5 Rnt}$
 B) $-\frac{(W_2 - W_1)}{Rnt}$
 C) $-\frac{n(W_2 - W_1)}{5 Rt}$
 D) $-\frac{n(W_2 - W_1)}{Rt}$

165. The maximum magnetic flux linked with a vector area $\vec{A}$ in a uniform magnetic field $\vec{B}$ is

- A) $\vec{B} \times \vec{A}$ B) $\vec{B} \cdot \vec{A}$ C) AB D) $\frac{B}{A}$

166. A horizontal loop $abcd$ is moved across the pole pieces of a magnet as shown in fig. with a constant speed v . When the edge ab of the loop enters the pole pieces at time $t = 0$ sec. Which one of the following graphs represents correctly the induced emf in the coil



167. A conductor of 3 m in length is moving perpendicularly to magnetic field of 10^{-3} tesla with the speed of 10^2 m/s , then the e.m.f. produced across the ends of conductor will be

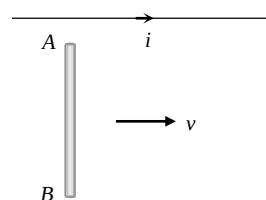
- A) 0.03 volt B) 0.3 volt C) $3 \times 10^{-3}\text{ volt}$ D) 3 volt

168. A conducting rod of length l is falling with a velocity v perpendicular to a uniform horizontal magnetic field B . The potential difference between its two ends will be

- A) $2Blv$ B) $\frac{1}{2}Blv$ C) Blv D) $B^2 l^2 v^2$

169. The current carrying wire and the rod AB are in the same plane. The rod moves parallel to the wire with a velocity v . Which one of the following statements is true about induced emf in the rod

- A) End A will be at lower potential with respect to B
 B) A and B will be at the same potential
 C) There will be no induced e.m.f. in the rod
 D) Potential at A will be higher than that at B



170. If a coil is wound on an iron core, the flux through it will:

- A) Decrease B) Become zero C) Remain the same D) Increase

171. If the magnetic flux linked with a coil varies at the rate of 1 Wb/min , the induced emf is:

- A) 1 V B) $1/60\text{ V}$ C) 60 V D) None of the above

172. Which quantity is decreased in secondary of step-down transformer?

- A) Current B) Voltage C) Power D) frequency

173. In an ac circuit $i = 100 \sin 200\pi t$. The time required for the current to achieve its negative peak value will be

- A) $\frac{1}{100}\text{ sec}$ B) $\frac{1}{200}\text{ sec}$ C) $\frac{3}{400}\text{ sec}$ D) $\frac{1}{400}\text{ sec}$

174. If the value of potential in an ac, circuit is 10V , then the peak value of potential is

- A) $\frac{10}{\sqrt{2}}$ B) $10\sqrt{2}$ C) $20\sqrt{2}$ D) $\frac{20}{\sqrt{2}}$

175. If a magnet is falling along the axis of an incomplete ring then which of them is true?

- A) Induce current is zero C) Acceleration of falling magnet is equal to 'g'
 B) Induce emf is not zero D) All of these

176. If a conductor is moved back and forth at a constant rate in a uniform magnetic field the induced emf in the conductor:
A) Be reduced
B) becomes zero
C) Be increased
D) Reverse polarity
177. An ideal transformer steps down 220V to 22V in order to operate a device with an impedance of $220\ \Omega$. The current in the primary is
A) 0.01A
B) 0.1A
C) 0.5A
D) 1.0A
178. In a step up transformer the turn ratio is 1 : 10. A resistance of 200 ohm connected across the secondary is drawing a current of 0.5 amps. What are the primary voltage and current?
A) 50 V, 1 A
B) 10 V, 5 A
C) 25 V, 4 A
D) 20 V, 2 A
179. The turn ratio in a step up transformer is 4 : 1 on passing a current of 4 A in the primary, the current in the secondary:
A) 0.25 A
B) 1 A
C) 2 A
D) 8 A
180. A transformer is used to reduce the main supply of 220V to 11V. If currents in primary and secondary are 5A and 10 A. The efficiency is:
A) 90%
B) 75%
C) 60%
D) 10%

Choose the correct word words to complete each sentence.

181. The victorious team were given a _____ welcome when they arrived home.
A) motiveless B) tumultuous C) pulchritude D) sage
182. Pursuant to some expert philosophers, the situation in the country has remained relatively _____ for a few months now.
A) stable B) remorseful C) duplicitous D) mischievous
183. Union leaders blasted the Government for failing to _____ the jobs crisis.
A) perturb B) satiate C) tackle D) vigour
184. It will take a lot of repair work before the theatre regains its former _____.
A) felicity B) splendor C) bloomer D) candid

SPOT THE ERROR: In the following sentences some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected. Fill the circle corresponding to that letter under the segment in the MCQ Response Form.

185. I took my watch to be repaired to the jeweler where I had bought it last year.
A B C D
186. While it is raining intermittent outside you will probably need an umbrella.
A B C D
187. The parents were searching with frantically for their child who was lost in the park.
A B C D
188. With each flash of lightning the light in the room dims almost to the point of going out, but somehow feeble struggles back to its full strength.
A B C D
189. The early hunter suffered grave shortages during the winter months and quite often these were serious enough to mean starvation of him and his family.
A B C D
190. I went up to the accountant wicket and poked the ball of money at him with a quick convulsive movement as if I were doing a conjuring trick.
A B C D

In each of the following questions, four alternative sentences are given. Choose the CORRECT one and fill the circle corresponding to that letter in the MCQ Response Form.

191.
A) The mother watched anxiously as her child crossed the street alone.
B) The mother watched with anxiously as her child crossed the street alone.
C) The mother watched anxiously like her child crossed the street alone.
D) The mother watched anxiously as her child crosses the street alone.
192.
A) The beautiful painted landscape is a wonderful addition to my living room décor.
B) The beautifully paintedly landscape is a wonderful addition to my living room décor.
C) The beautifully painted landscape is a wonderful addition in my living room décor.
D) The beautifully painted landscape is a wonderfully addition to my living room décor.
193.
A) It was certainly sadly news even though it was true.
B) It was certainly sad news even though it is true.
C) It was certainly sad news even though it was true.
D) It was certainly sad news even though it was truth.
194.
A) Many of the students did poor on the final exam last year.
B) Many of the students did poorly on the final exam last year.
C) Many of the students had done poorly on the final exam last year.
D) Many of the students did the poor on the final exam last year.
195.
A) The railway men were on strike, soldiers were driving the engines, stones had been thrown at trains.
B) The railway men were on strike, soldiers were driving the engines, stones had been thrown on trains.

- C) The railway men were at strike, soldiers were driving the engines, stones had been thrown at trains.
D) The railway men were on strike, soldiers were driving the engines, stones had been thrown into trains.

196.
A) Political control on the masses not only stops the exodus from the countryside, but even manages partly to reduce the populations of cities.
B) Political control over the masses not only stop the exodus from the countryside, but even manages partly to reduce the populations of cities.
C) Political control over the masses not only stops the exodus from the countryside, but even manages partly to reduce the populations in cities.
D) Political control over the masses not only stops the exodus from the countryside, but even manages partly to reduce the populations of cities.
197.
A) Commerce and agriculture flourished and the sources of income of the state were multiplied.
B) Commerce and agriculture flourished and the sources of income in the state were multiplied.
C) Commerce and agriculture flourished and the sources of income for the state were multiplied.
D) Commerce and agriculture flourished and the sources of income to the state were multiplied.

198.
A) These were general famines when a large area of the country was affected but there were many more local famines.
B) These were general famines when a large area of the country was affected but there were much more local famines.
C) These were general famines when a large area of the country was affected but there are many more local famines.
D) These were general famines when a large area of the country was effected but there were many more local famines.

In each of the following questions, four alternative meanings of a word are given. You have to select the NEAREST CORRECT MEANING of the given word and fill the appropriate Circle on the MCQ Response Form.

- | | | | | |
|-----------------|---------------|--------------|---------------|----------------|
| 199. ZEST | A) vivacity | B) ire | C) knuckle | D) gasp |
| 200. ZENITH | A) terse | B) acme | C) acumen | D) altercation |
| 201. VULNERABLE | A) ingenuous | B) ruminated | C) unshielded | D) lamentable |
| 202. TACKLE | A) cope with | B) cope up | C) coop with | D) coop up |
| 203. SUCCULENT | A) resounding | B) rampant | C) mummifying | D) palatable |

In each of the following questions, four alternative words are given. You have to select the option OPPOSITE in meaning to the given word and fill the appropriate Circle on the MCQ Response Form.

- | | | | | |
|-----------------|--------------|-------------|----------------|------------|
| 204. SOLEMNLY | A) venerably | B) stately | C) frivolously | D) loftily |
| 205. Tomfoolery | A) lunacy | B) sagacity | C) folly | D) blooper |